Cost and Management

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By Michael Albery 287

Dr. Michael Albery, Associate Professor at Boston College, is the author of numerous papers in the fields of economics, finance and industrial management. His most recent articles appeared in the Political Science Quarterly, the Review of Social Economy, and the Review for Advanced Management. This is the second of his articles to appear in Cost and Management.

THE CANADIAN ECONOMY OF TO-MORROW
By Donald Bailey Marsh 293

Donald Bailey Marsh received the degree of Bachelor of Arts from the University of New Brunswick in May, 1935, with first class honours in Philosophy and Economics. He received the degree of Master of Arts from Louisiana State University in June, 1936. In September, 1936, he entered the University of Illinois and completed work for the Ph.D. degree in May, 1940. Since receiving the doctorate, he has taught at Barnard College, Columbia University, the Columbia Graduate School, and (since 1947) at McGill University. From 1945-1947 he was associated with the Department of Financial and Business Research of the Chase National Bank. In 1947, he was appointed Professor of Economics, McGill University, and Economist, The Royal Bank of Canada. In 1952, he was appointed Director of Economic Research, The Royal Bank of Canada.

COST FACTORS IN ADJUSTING PRICES
By R. F. Hogan 301

Born in Windsor, Mr. Hogan is a graduate of the University of Western Ontario in Business Administration. While at university he distinguished himself not only as a scholarship student, but also as an athlete. He joined Ford of Canada in 1934 and after extensive experience in the company's finance division was appointed head of the factory accounting division. He has held his present position since 1947. This article was presented at Technical Sessions of the 12th Annual Ontario Conference of S.I.C.A. in Hamilton in the month of May.

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Published Monthly by the
SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS OF CANADA
Incorporated 1920
Editorial and Business Offices: 66 King St. E., Hamilton, Ontario.
J. N. Allan, R.I.A., Secretary-Manager and Editor.

Subscription price to non-members, $5.00 per year. Single copies, 50 cents. Members desiring five copies or more of a single issue, may obtain them at 25 cents. Opinions expressed by articles and comment are not necessarily endorsed by the Society of Industrial and Cost Accountants.

Authorized as second class mail, Post Office Department, Ottawa.

Editorial Comment . . .

August tenth

At the time of going to press, Canada is facing another election. A democratic people is again being given the right to indicate its political preference. By the time "Cost and Management" reaches you that election may be history and the party which is to control our political destiny for the ensuing term will have received its mandate. The sphere of political influence is wide, and has a substantial effect on economic conditions both in Canada, and in Canada's relationships with other countries. In matters of taxation, tariff policy, development of natural resources, and in many other ways, political philosophy can contribute to the economic growth of a democracy. Basically, what do we mean when we refer to the "economic growth of a democracy"? Surely it is not a question of whether taxation or tariffs are high or low, or whether natural resources are being exploited wisely or wantonly, but rather the creation of an atmosphere in which a country's people may have the right to think and act as individuals and through their thoughts and actions to produce the greatest good for the greatest number. Whether it be politics or business, sound human relations are the core of all our negotiations and a political system which fosters clear thought and decisive action in its peoples contributes much to the country's economic growth.

Spice from the Orient

Canadian economic thought has been influenced largely by literature from Great Britain and the United States. Economic problems exist in other countries but until now we have not perhaps paid sufficient attention to what is being written elsewhere. Only recently we have reviewed a current copy of Osaka Economic Papers (fortunately in English) which indicates that the Orient, through Osaka University, is contributing its share to the literature of economic thought. Six articles comprise the set of papers.

One deals with the problem of "Depreciation and Maintenance of Fixed Assets in Inflation". The question of whether depreciation reserves should be provided to cover only the historical cost of fixed assets or whether they should be sufficient to provide for the replacement of the assets at their inflated costs is admirably discussed in this article.

CED

Too many of us are perhaps prone to regard our own problems,—whether they be personal, business, or national, as all important, and to overlook the fact that in assisting in the solution of the "other fellows" problem, we may considerably alleviate our own. There is an organization in the United States numbering among its Board of Trustees the presidents and senior executives of some of the largest and best known corporations and universities. In its own words,—

"The Committee for Economic Development is a non-profit organization of 145 leading businessmen and educators who are devoting their time, experience and resources to objective economic research and education. It is supported by voluntary contributions from business and industry and is non-partisan and non-political.

CED was incorporated in September, 1942, with Paul G. Hoffman as its first chairman. It grew out of an idea advanced in 1939 by Mr. Hoffman and other leaders in business and education that "we should enlist the services of the best brains from our universities and from business and put them to work in solving the problems of how high productive employment can be atttained and maintained in a free society."

BASIC OBJECTIVES

CED is dedicated to these basic objectives:

1) To develop, through objective research and discussion, findings and recommendations for business and public policy which will contribute to the preservation and strengthening of our free society, and to the maintenance of high employment, increasing productivity and living standards, greater economic stability and greater opportunity for all our people.
2) To bring about increasing public understanding of the importance of these goals and the ways in which they can be reached.

The Research and Policy Committee of CED has recently published its findings on "Britain's Economic Problem and its Meaning for America." The thoughts expressed in the last two paragraphs of that article show a significant trend towards a growing realization that national isolation and insulation are not consistent with economic development of the free peoples of the world:

"To sum up, the basic causes of Britain's economic problem point to a need for much more intensive trade and financial relations between Britain and the Commonwealth and the United States. To achieve this, two conditions must be met. The first is a more secure access for British industry to the American market. The second is a greater sense of security for American investors in Britain and other parts of the Commonwealth.

This policy statement is based on our conviction that America has a vital interest in Britain's economic strength. It reflects our belief that Britain's economic problem requires for its solution the growth of a new and special relationship between the United Kingdom, the Commonwealth and the United States. A closer relationship between America, Britain and the Commonwealth, together with the movement toward federations by the democracies of continental Europe, will contribute to that growing unity of the whole Atlantic Community on which depend the peace, security and welfare of all free nations."

C & M Round-Up . . .

By N. R. Barfoot, R.I.A.

Bank Interest

The Bank Act is under revision. Will the maximum interest rate which banks can charge be increased from the present 6%?

The limit on bank interest formerly 7%, was cut to 6% when the bank act was revised in 1944. During the war, rates generally fell when Government bonds were revised to bear 3%. There has been a rise in bond and mortgage interest rates since the war end and some feel that the upper limit on bank loan interest should be raised.

Such an increase might in turn bring pressure for an increase in the rate on savings deposits.

Profit Sharing

Some 70 firms in Canada are engaged in some form of profit sharing.

The council of profit sharing industries which has its head office in Akron, Ohio has approximately 90 different plans by which companies share profits with employees.

Those in Canada fall into four general groups.

. . . Cash plans whereby a certain percentage of profit is added to regular wages and distributed periodically.

. . . Wage dividend plans where the percentage of the dividend is announced at the time stock holders' dividends are declared. In some cases, determined by the stockholders' dividend according to a prearranged formula.

. . . Stock ownership plans in which employees are given shares of company stock.

. . . Trust plans where a percentage of the profit is accumulated in a trust fund for employees, with or without employee contributions, and payable on retirement.

Officials on the council say that a minimum of $230.00 per employee per annum is expected and it may rise as high as $1,000.00.

A tremendous increase in the productive output per employee in most industries would certainly be needed to meet these figures.

St. Lawrence Seaway

United States and Canadian relations on this subject are still in a fluid state or to be more blunt, in a muddle.

However, it might be interesting to recapitulate some of the known facts.

Construction Costs

Total 263 millions made up as follows:

	Canada	U.S.
Welland Canal	2	
Thousand Islands		1.8

International Rapids, Locks and Canal		86.0
Canadian Section	173	
Total	175	87.8

Potential Traffic

Estimates by experts in both countries indicate 44.5 to 45.7 million tons. This includes up and downbound traffic. A breakdown shows:

Grain	10 million tons
Iron Ore	20 million tons
Coal	6 million tons
Oil	2 million tons
Wood pulp	1 million tons
General Cargo	6 million tons

Boats

At this vacation time, it might be interesting to quote a few figures on the small boat business in Canada. The pleasure flotilla in this country is of growing importance. Higher incomes, the long week-end, and mass production has pushed the boom. Of course, the average Canadian is an outdoor type and longs for lakes, sunshine and outdoors.

At least 700,000 of these small boat enthusiasts fall into the above category.

There are 230 boat builders in Canada. Last year they turned out 8 millions worth of pleasure craft.

1,500 people are employed; 74 factories are in Ontario, 60 in B.C., 51 in Nova Scotia, 31 in Quebec and the balance spread throughout the other provinces.

Production statistics show, over the past year the following split of business:

Outboards	42%
Row Boats and Skiffs	22%
Canoes	17%
Motor Runabouts	7%
Sailboats	3%
Life Boats	2%
Others	7%

Production methods show a swing to non-wooden material, mass production of boats in knocked down form and prefab of standard hulls at a central plant, with local builders finishing.

Power

Our high Canadian standard of living is dependent among other things upon available power. Energy in the form of oil, coal, gas and electricity for heat, refrigeration and motor power is the vital physical part of the fabric of Canadian civilization.

How do we stand by way of usage and future requirements? Our total consumption has doubled since 1926, and increased 70% from 1930

to 1950. We seem to be running short of low cost hydro power sites close to industry.

Estimates of present day usage and projected consumption show:

	To-day	1965	1975
Oil (million bbls.)	172	297	356
Natural Gas (billion cu. ft.)	96	315	400
Coal (million tons)	43	43	66
Hydro (billion KWH)	64	116	158

Solutions are varied and individual to the province.

Steam plants and the St. Lawrence waterway is Ontario's plan. Costs for steam generated power 7.5 mills per KWH, water generated power 3 mills per KWH.

Gas is of immediate interest to the West and of national interest within very few years.

In 1937 there was 32 million cu. ft. available, in 1952 92 million cu. ft. Reserves are now placed at 100 times the '52 supply figure and growing. Cost in Eastern Canada will to a degree determine its usage. It must compete with fuel oil.

Coal reserves are estimated at 50 billion tons and are not to be written off as an energy producer. Better conversion efficiencies will lower its final cost as fuel and a better use of by-products should produce the same effect.

Capital Expenditure 1953

The 1953 capital expenditure program for Canada totals 5.4 billions or about 23% of the estimated gross National product.

Where is this going and from where will it be obtained?

The expenditure itself will be made in the following fields:

. . . Housing	981 million	18%
. . . Other building construction	1,197 million	22%
. . . Engineering Construction	1,254 million	23%
. . . Machinery and equipment	1,989 million	37%

The funds will be provided from the following sources and approximate amounts:

. . . Depreciation and depletion reserves	2,100 millions	38½%
. . . Personal savings	1,700 millions	31%
. . . Undistributed corp. profits	800 millions	15%
. . . Life ins. companies	450 millions	8%
. . . Government	300 millions	6%
. . . Trust and Loan Companies	81 millions	1½%

Profits

A recent survey by the C.M.A. shows that profits earned by Canadian Industry in 1952 averaged 5% on each dollar of sales.

The following table shows the picture for the past five years on a breakdown of the sales dollar.

	1952	1951	1950	1949	1948
			cents		
Net Profit	5.0	5.8	7.1	5.8	6.2
Income Tax	5.1	5.8	4.9	3.4	4.9
Wages and Salaries	21.3	22.0	22.0	19.7	23.2
Employee Benefits	1.3	1.3	1.3	1.1	1.2
Materials	48.7	46.9	46.3	53.7	40.3
Sales and Excise Taxes	3.6	3.5	2.9	3.2	9.5
Other Expenses	11.6	11.6	12.3	10.3	10.8
Depreciation	3.4	3.1	3.2	2.8	3.9

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Drawings and Sketches

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Advertising and Circulation Statistics
Advertising Presentations
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The Cost Accountant, 63 Portland Place, London W-1, England

The Australian Accountant, 37 Queen St., Melbourne C-1, Australia

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Basic Data . . .

By Michael Albery

In planning systems of financial control, attention is usually focused on top problems without regard for methods which will assure accuracy of information at the source. The author offers five requisites for accumulating basic data with a reasonable degree of accuracy in keeping with justifiable costs.

DESPITE the general excellence of the modern textbooks on cost and statistics, we feel that many of them betray one weighty weakness. They do not reveal the actual difficulties involved in obtaining the basic data nor do they reveal the too often doubtful accuracy of the data when they are finally obtained.

Many executives operate on the assumption that the data that flows steadily across their desks is truly indicative of the conditions which they ought to represent. The same executives would be tremendously surprised to find that sometimes a large percentage of error, and a misleading interpretative value results from this daily flow of data as their relatibility has been too freely taken for granted. Their sources have rarely or never been checked! We are inclined to be hypnotized by clean-cut reports: their neatness induces us sometimes to assume that their intrinsic values are on the same level as their formal appearance.

Indeed, you may observe analysts indulging in a clinical scrutiny of cost or statistical data, unaware of the fact that what they assumed to be a solid body of reliable information is but a crude approximation and/or guess. No durable structure can be built on weak foundation or moving sand. Nor can exact analytical work be performed with unreliable basic data. The attention of the analyst gets focussed on wrong clues, while important clues pass unnoticed, as the available information does not bring them to light, and thus wipes out all the effort put into any research study.

Most of the basic data needed for cost and business statistics are quantities of goods received, stored, used, produced, scrapped, sold:—periods of time spent on the performance of definite jobs, parts, units, assemblies, equipments:—time lost due to various reasons:—funds disbursed for labour, material, overhead. No computation of the above data can be one hundred percent accurate. The attempt to reach absolute accuracy would be uneconomical and futile. Between 95% accuracy or a guess is enough leeway for precipitating a company into bankruptcy, by basing decisions on wrong information or on information misleadingly weak.

Executive decisions should be based on constructive studies. These studies should emanate from interpretation of analytical data. To pro-

vide sound analytical data, the sources of these data should be established, and the methods for the gathering of basic data made as stringent as it is technically possible.

Most Common Predicaments

The reader will probably remember some of his past experiences relative to the difficulty of making decisions due to an evident lack of reliable basic data. The reader could cite (without straining his memory) cases of unreliable counts, sloppy weighing, lack of precise definition of the basic elements of cost, the usage of an item once as direct, and then the usage of the same item as indirect, etc. In none of these cases was deliberate distortion planned. Broad instruction was probably given in every particular case requesting the data. The instruction was also complied with, since *some* data were provided!

The reader and author have had the opportunity to be close to the operations of a limited number of companies only. Generalizations, therefore, would not be equitable; they would be unfair to the companies which are proud of their absolutely faultless methods and definitely accurate and reliable basic data. To preclude hurt feelings, the reader will tacitly agree with the author that we are discussing the very few cases, where conditions are not wholly as ideal as they seem to be!

When it is decreed that definite precise information is regularly needed, that the information has to be supplied in a definite form at a definite date, — the decree may often amount to wishful thinking . . . We do not mean to imply that the information is not given at all. What we would like to stress, however, is that in many instances the basic data supplied symbolize a rather fallacious value, because the prerequisites for the completion of reliable data are not available and when they are available the compilation is not always meticulously prepared.

Providing reliable, accurate and precise basic data amounts to a toilsome, often discouraging task. Only those who actually have had a hand at this wearisome job are aware of the exasperating experience on the thorny way to satisfactory results.

The longer some compilations are being performed as a routine function, the more chances there are that somewhere along the line an error is constantly taking place or some figure is merely being guessed at periodically and inserted in its proper spot on a statement.

In a well-known large oil distributing company the employees examining financial reports would ask each other ironically about the feelings which prevailed among the many drivers, who were writing and sending in the report-tickets. With one foot on the running board of the tank truck, the report book on the knee, the truck drivers were

reporting "approximations". Depending on the amount of good or bad approximations, flowing each month into the main office, income statements were in the black or in the red.

Path to Improvement

Why are the basic data so often incorrect and unreliable, and what should be done to correct them?

When a system is set up, generally too much attention is devoted to top problems, and too little to the activities at the very bottom of the chart. The cost or business statistical information necessary periodically for the control of operations can be easily determined. Every text book contains them and takes them for granted. Can the reader cite a text book which tells in minute details how to gather basic data, who should be responsible for providing them and especially the many actual difficulties encountered in the endeavour to collect them?

Are most of the controllers, auditors, chief cost men justified in taking "lightly" this phase of their activities? Are educators doing justice to their students when they take for granted that basic data just flow automatically into the channels set for the gathering of the data in a given system?

From behind a shiny desk, matters look much easier than in the shop or "on the floor". Do most of the men working at desks take the trouble to go to the actual spot from which the basic information originates?

What are the premises of correct reliable basic data?

The first premise is the availability of conditions which make the gathering of data physically possible. Let us mention the case of a plant under new management where the exact amount of material leaving the stock-room for the machine-shop and for definite jobs had to be ascertained. Let us further assume the new management of this old established plant requested that the exact number of good and bad pieces turned out by every workman be also recorded. At first glance, nothing appears simpler! All that has to be done is "to get the information" and to write it down!

In the shop under discussion, however, an actual stockroom never existed: the material when purchased was dumped on the floor and every operator just took what he needed. Any changes in the set-up were resented as mistrust and were followed by lulls in work and drop in overall productivity. The attempt to count production per man, and especially the items scrapped by each operator proved almost impossible, as no one ever reported any scrap. Whatever did not meet requirements was dumped by the operators into the scrap barrels and the inspector never saw it. The inspector who had been in the plant for 20 years was related to some of the operators and in close friendly contact with others!

Though the physical conditions for the providing of the data were not available, the data were somehow furnished to new management! The reader shall decide for himself about the reliability and usefulness of these data.

Similar cases can be cited in the field of direct labour cost. There is nothing unusual for instance in the request that the time spent on each particular job be exactly recorded and the idle time reported.

Let us take the case of a plant where operators punch in and then proceed to their place of work after changing their clothes. It takes them 10 to 15 minutes to be at their working places close to their machines and assemblies. Before the foremen and the dispatchers allot work to every worker, one hour or more elapses and during this time the operators are standing idle. None of the lost time is ever recorded as idle time! When the rumour is spread that some of the jobs were on the losing side, these jobs are hastily worked on but no further labour charges ever appear against them!

The second premise for gathering of reliable basic data would be the establishment of clear unequivocal methods. These methods or systems should be set up step by step, one following the other logically, the specific duty of every particular employee concerned emphatically specified and no leeway left for interpretations in the shop, on the floor or in the stock room.

The third premise would be the setting up of forms as simple as possible, requiring the least mental effort to understand, followed up, in spite of their elementary character, by a thorough instruction regarding their completion.

The fourth premise would be the thorough indoctrination of all the employees concerned, relative to the urgency of a meticulous approach in the performance of duties and the weighty consequences of negligence in the gathering of the data.

The fifth and perhaps the most important premise would be a regular recurring check upon the reliability of the system. We mean a check from the very bottom of the production process, up to the elaborate statements and charts which are to reflect favourable or unfavourable trends or results of operations.

Internal auditors will find here a wide field for fruitful activities!

It should be stressed that the reaching of a hundred per cent accuracy in basic data is practically unattainable and the endeavours to aim at it, most costly. A reasonable level of accuracy, attainable at normal cost should be planned and systems and controls set up accordingly. (See "Cost and Management" January 1953, paper on "Cost of Cost".)

Coming back to the first premise, namely the availability of conditions which make the gathering of data possible, we have to dwell more penetratingly into the human aspect of this premise. The men at the top of the charts must rely upon the co-operations of all the men

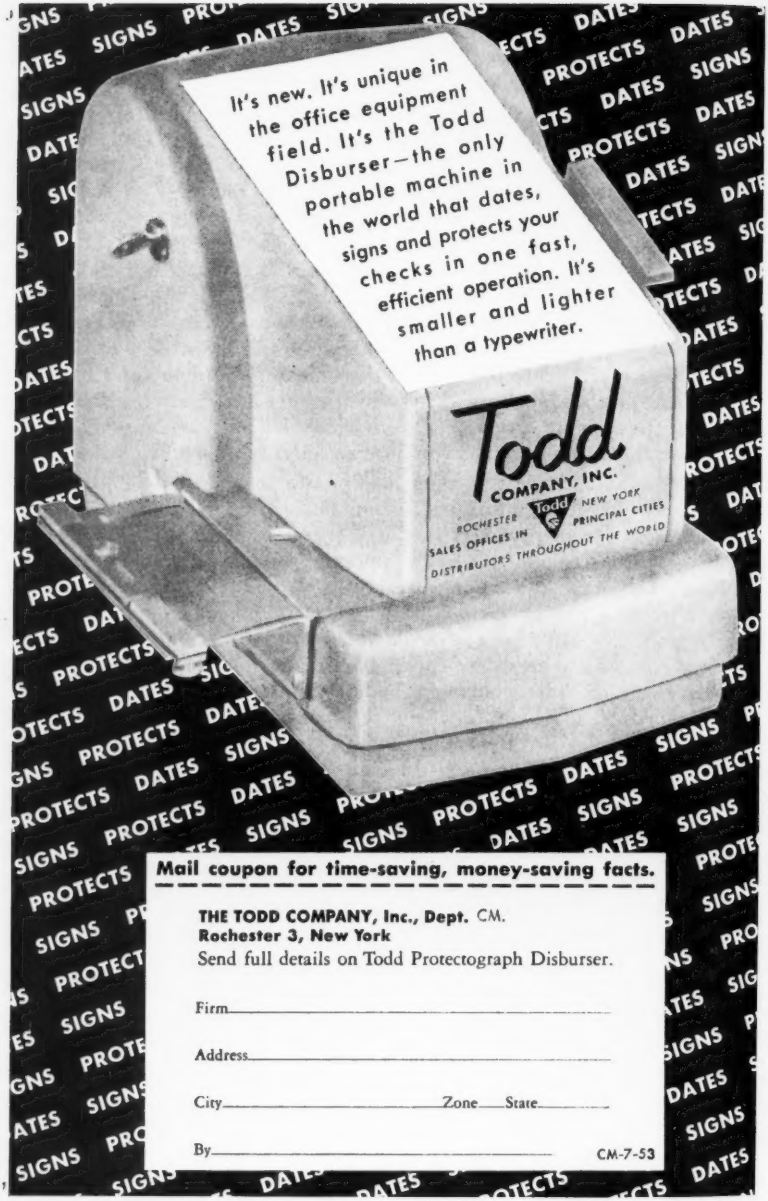
at the various echelons, down to the operators at the very bottom of the charts. If somewhere along the line a lack of communication occurs, the success will be jeopardized.

Instructions and procedures foreseeing every possible eventuality are of course essential. Flow charts showing graphically step by step every action needed to reach the end results are most helpful. The human willingness behind these instructions, procedures and charts is, however, of prime importance. Emotional thrusts may have to be overcome, prejudices combatted, old rooted and queer customs fought. To-day, this has to be done by persuasions and education. The old method of "firing" indiscriminately seemingly recalcitrant elements in order to intimidate others is looked upon as an outworn relic of an extinct industrial age. Fortunately, this method cannot be adopted, as the operators are protected in many instances by unions, and also by progressive personnel men within industrial organizations. Should they be used, they would produce a violent impact on the morale of the workers and could impair the community relationships of the enterprise.

Persuasion and education are drawn-out, time-consuming processes. They require good technical preparation and patience. Many companies are conducting regular classes for foremen and sometimes also for operators — to impress upon them the necessity of having accurate records and keeping cost at the lowest possible level. They are also shown how their reporting ties in with reports made for management. They are shown that they are a part of a team, in which they play the most important role. An educational program remains a pleasant pastime for the attending employees and some additional activity for the industrial relation people, if it is not backed by management. Mere acquiescence to it by management is not sufficient: employees should have first hand evidence of management interest. Management can manifest this interest by sending personal letters to attending employees, by discussing the program and sounding out the opinion of a few participants. The news about the interest of "the boss" in any particular matter goes around quickly!

Educators in the field of cost, business statistics and accounting will certainly render a valuable service by explaining to their students the weighty significance of correct basic data, by stipulating the conditions which should prevail so that the data can be gathered, by actually teaching them how the basic data should be collected and periodically checked.

The availability of conditions needed for the smooth flow of reliable basic data, the rechecking of methods adhered to in compiling of basic data may be one of the most weighty assignments you will be giving, dear reader, during the course of the next few days! It would perhaps be still better if you would risk some grease spots on your hands and clothes and check yourself in the stock room and in the shop.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The Canadian Economy of To-Morrow . . .

By Donald Bailey Marsh, M.A., Ph.D.,
Director of Economic Research, The Royal Bank of Canada, Professor of Economics, McGill University.

In forecasting Canada's future economic position, the author first considers the place of Canada in the general scheme of economic development and the "development of economic development" in Canada itself. He then offers some predictions for the Canadian economy and presents some conclusions regarding the shape of things to come, with particular reference to the changes which can be expected in industry, agriculture and foreign trade.

MY TOPIC is admittedly ambitious — so ambitious in fact that I should perhaps begin with a word of apology. My choice was influenced by two factors. The first was immediate and urgent; the second ubiquitous but no less compelling.

In the first place, the theme of your conference is "Canada's Future". Faced with this, I could take some small comfort in the economist's privilege of talking only about the *economic* part of the future, leaving to others the really difficult problems involving those political and cultural forces that may as you know create unity or division, weakness or strength, autonomy or dependence, in this young nation we call Canada.

In the second place, the economist, like the theoretical or practical political scientist or sociologist, finds that the questions he is expected to answer change with the changing times. Before the Second World War (I speak now only for economists) we were asked, or though we were asked, how to promote recovery, guarantee full employment, or in the long run how to exorcise the spectre of economic stagnation. Now all this has changed. Some economists, it is true, still persist in answering the old questions — and perhaps they should just to keep in practice for a future that none can clearly see. But, in general, the interest of businessmen, legislators, and the general public, has shifted to the far more cheerful topic of economic growth and development. This, of course, is a reflection of the buoyant economic conditions which, in spite of many predictions to the contrary (both on this and on the other side of the Iron Curtain), have persisted in most countries since the end of the Second World War.

In the 1930's the late Lord Keynes said that in the long run we are all dead. His purpose was to shock us into a measure of short-run sin in order to achieve long-run salvation. We should adopt "unsound" finance in the present to combat the immediate peril of unemployment. With full employment achieved we could then perhaps return to the economic virtues of the pre-depression years. To-day we have little need for

preaching of this kind. Our history since the war has shown that there are few sacrifices of economic principle that we are unwilling to make in order to counter through expedient any real or imagined threat to present comfort. Nevertheless, it is worth while, I think, to remind ourselves that expediency, however necessary it may be, is no substitute for sound principle. The expedients of inflationary monetary and fiscal policy, price and exchange controls, tariffs and import restrictions, are no substitutes for the free-market principles which, suitably upheld and in some cases limited by law, makes efficiency and hard work the general means to individual economic success. This principle is essential to that system of political and economic freedom in which most of us profess to believe.

I readily concede that economic development can occur under other systems, and, as a more or less pure economist, I could make some observations about the economic future under all sorts of assumptions about the economic and political environment. But in what follows I shall assume that in Canada at least a system upholding political and economic freedom will prevail, with all the dangers of such a system to the vested interests of certain individuals, industries, and regions in the economy, and with all the promise of such a system for the long-run wealth and happiness of everyone.

I shall consider, first, Canada's place in the general scheme of economic development; second, what I have called the "development of economic development' in Canada itself; third, some expert predictions for the Canadian economy of the future; and, fourth, some conclusions regarding the shape of things to come with particular reference to the changes we may expect in industry, agriculture, and foreign trade.

Canada's Place in the General Scheme of "Development"

The theory of economic growth and development since the war has been forced to define its terms. What is an "underdeveloped area?"

Clearly, every organism in the process of growth must be proceeding from a less developed to a more highly developed state. This development may be in mere size, or in complexity, or in both together. In any economic system, various criteria may be used to measure growth: population, labour force, national product, degree of industrialization, and the like:

What seem to be the obviously "underdeveloped areas" of the world do not as a rule suffer from a dearth of population; and it is clear that this, like other criteria, must be used with circumspection.

It has sometimes been argued that the way to economic growth is to raise the national product through industrialization. But, again, many wealthy countries are big agricultural producers; and it is not immediately clear how an overpopulated country will better itself by cutting down its food supply in order to increase its output of refrigerators.

I think we can say that a country is at least "relatively" underdeveloped if it has a large potential, in the form of natural or human resources, and if this potential can be realized either through better balance (e.g., through the addition of more men, or machines, or raw materials) or through the discovery and diffusion of better techniques in agriculture or industry. In this sense Canada is certainly an underdeveloped country, in spite of the fact that she now enjoys a standard of living second only to that paragon of economic development, the United States of America.

The "Development of Economic Development" in Canada

Traditionally, Canada has been a country of open spaces, sparse population, and capital scarcity. These are attributes often associated in economic literature with underdeveloped areas. But, as Professor Viner has pointed out, open spaces do not mean underdevelopment if in fact they are not worth filling. Such spaces, it is true, are *undeveloped*, and for excellent reasons should remain so. But they are not *underdeveloped* in the sense that they have a productive potential that can be economically exploited. The same is true of sparse population and capital scarcity. These attributes mean underdevelopment in the economic sense only if geater population could attain a higher income per head than the present population is receiving, or if more capital could, similarly, raise the income per head of the whole population. In Canada, we have the resources that make possible higher income per head through the addition of more of our scarce factors: population and capital. We are a truly underdeveloped country, in that development here will pay off.

Before gazing into the future, let us look first at Canada's development in the past.

Canadian industrialization began in the 1890's and attracted a large capital inflow during the period 1900-13. In this early period, the influx consisted mainly of British capital. Professor Viner has estimated the net inflow at $2,506,434,000.[1] The First World War stimulated industrial development and paved the way for post-war expansion with the aid of American capital during the period 1920-29. In the four years 1926-30 alone, the net inflow of capital from all countries amounted to $1,611.2 millions.[2]

Indeed, we must be careful in our current enthusiam not to underrate the progress made during the 1920's. In terms of constant (1935-39) dollars, investment per head of population in 1929 was 11 per cent greater than in 1950, and about the same as in 1952. Investment as a percentage of Gross National Product, even in current dollar terms, has never equalled the 25 per cent reached in 1929. Perhaps I should add,

1. Jacob Viner, **Canada's Balance of International Indebtedness 1900-13**, Cambridge, Mass., 1924, p. 108.
2. Dominion Bureau of Statistics, **Canada's International Investment Position**, 1949, p. 33.

however, that our 1952 figure of 22 per cent is to-day unequalled anywhere in the world.

The depression of the 1930's checked both the capital inflow and the pace of Canada's industrial development. But again the Second World War, like the first one, stimulated industrial development, this time on a much larger scale than before. In the immediate post-war period this development continued; but up to 1948 it was still financed largely from domestic sources. Total "Gross Domestic Investment" for the two years 1946-48 (excluding changes in inventories) was $6,204 millions. Foreign investment during the period was $399 millions, or only 6.4 per cent of this total investment in plant, producers' durable equipment, and housing.

Since 1948, expansion in foreign investment in Canada has been spectacular: In 1949 $454 millions, in 1950 $707 millions, in 1951 $822 millions, and there is every evidence of a continued flow of similar proportions in 1952. During the period 1949-51, about $1.7 billions, or 89.5 per cent of the total foreign investment of $1.9 billions, came from the United States, and about half of the U.S. total went into direct investment in branch plant and subsidiary corporations in Canada. These direct investments went largely into oil, mining, pipeline construction, and pulp and paper, with perhaps about 12 per cent going into traditional channels; i.e., manufacturing of U.S. trademarked products in Canada. In other words, the boom in direct investment was in large measure a boom in new primary industry of the sort which in turn will make necessary the creation of an even greater superstructure of secondary industry. It is this primary expansion in oil, iron ore, tungsten, and aluminum that dominates the scene at present, even though a large part of Canada's total investment takes less glamorous forms. In fact, foreign investment, large and valuable as it is, still remains a relatively small part of Canada's total investment. In 1951, for example, new direct investments in Canada, plus purchases of new securities by non-residents, amounted to 663 millions; but in the same year Canada's Gross Domestic Investment less inventories (that is, her investment in plant, producers' durable equipment, and housing), was $3,810 millions. In 1952 it is officially estimated that this figure was $4,138 millions and the corresponding foreign investment figure $623 millions. Perhaps we could say that about one-sixth to one-seventh of Canada's Gross Domestic Investment is financed from abroad.

So much for the "development of economic development" in Canada. Let us consider now some current predictions regarding Canada's development in the future.

Models for the Canadian Economy

During and since the Second World War, the construction of so-called models has become a favourite indoor sport among economists here and abroad. Instead of an honest crystal ball, the economist con-

structs a self-consistent model of what, given certain assumptions, he thinks the economy will look like in 5, 10, 20, or x years from now. For example, if, for year x, you assume a certain rate of population growth, a certain proportion of labour force to population, a certain rate of labour productivity (which contains "capital productivity" implicitly), you can confidently predict the full-employment Gross National Product for year x. That is the essence of economic model building. Of course, some models have later become a source of embarrassment to their makers; for example, those that predicted post-war unemployment of 8-10 millions in the United States. But fortunately memories are short, and in any event the careful and experienced model builder will have plenty of built-in hedges just in case something goes wrong.

A very good example of a simple full-employment model is hidden within the five volumes of the American "Paley Report"[1] This model was originally designed to indicate changes in the American economy, but Canada is so important in U.S. trade (particularly in raw materials), that she gets a little model of her own. Now, as you will see, the important things are the assumptions. The Paley Report makes six main ones, and two subsidiary ones. The main six are:

(1) there will be no major war;

(2) population growth in Canada will follow the natural rate of growth in the past;

(3) the level of unemployment will remain stable at about 3 per cent of the total labour force;

(4) the same percentage of the population will remain in the labour force;

(5) produce per man hour will rise by about 2½ per cent per year; and

(6) hours worked per worker will fall by 15 per cent.

The two subsidiary assumptions are that:

(1) (a corollary to the first six) owing to increasing productivity per man hour, the labour force will not increase as rapidly relative to Gross National Product as it has in the past — i.e., capital must grow faster than population or labour force, or producers' durables will increase as a proportion of the Gross National Product; and

(2) private non-residential construction will increase by 50 per cent in 1975, relative to what it was in 1950 — a corollary to the committee's assumption regarding capital expansion, which involves new plant, and the growth in the number of workers, which implies more plant space.

1. U.S. Executive Office of the President, The President's Materials Policy Commission (Paley Commission), **Report**, 5 vols., Washington, D.C., Vol. II, Ch. 22.

On these assumptions, the Report concludes that in 1975 total population will be 17.9 millions (30 per cent above the 1950 figure of 13.8 millions); and Gross National Product, in 1950 prices, will be $36.7 billions (or 104 per cent above the $18 billions figure of 1950). The population figure used in the Paley Report is lower than some corresponding figures that have recently emanated in various ways from Ottawa. If the population figure is low, then, given the rise in productivity, the Gross National Product figure will be low as well. Other population estimates I have seen are 18.9 millions by 1971, and 20-23 millions by 1975-80. These represent gains of from 40 to 50 per cent instead of the Paley Report's conservative 30 per cent. Corresponding figures for Gross National Product are $28-36 billions in 1971 (in 1949 prices), and $50-60 billions by 1971 — a range over-all, in percentage gain, of from 74 to 161 per cent. So you see we still have a fairly wide choice; as long as we agree that we are going up.* (The table on page 299 gives these figures in more detail.)

Our models make no independent estimates of the course of Canada's foreign trade over the next twenty-five or fifty years. In a country where exports in 1952 ($4.4 billions) were 19 per cent of Gross National Product ($23 billions), or 24 per cent of Net National Income ($18.3 billions), this omission would appear to be inexcusable. Of course our foreign trade is implicit in the over-all figures for Gross National Product; but many of us will be interested in what we should expect in terms of the volume and composition of our primary-goods and manufactured exports. Off-hand, one would expect a rise in the absolute value of both primary-goods and manufactured exports, but a decline in the relative value of exports as a whole when compared with the National Income or the Gross National Product.

To-day about 4/5 of manufacturing output is consumed at home. Nevertheless "fully or chiefly manufactured" goods made up 67.9 per cent of total exports in 1951. Even in 1938, manufactured exports were over 45 per cent of the total. As time goes on, one would expect an increase in exports of this type, particularly to countries of the British Commonwealth and to Latin America. The so-called underdeveloped countries with programmes for industrialization will be potential customers for the type of machinery which Canada's growing industrial plant will be able to provide. Industrialization of these countries may be wise or unwise, but, provided they get the dollars, Canada's exports of manufactured goods may show a substantial gain.

What about our primary-goods exports? These too should show substantial gains. In the first place, as the Paley Commission points out, we have abundant supplies of the basic raw materials (e.g., iron ore, copper, lead, and zinc) which the U.S. will need in increasing amount as her own resources of these materials are progressively depleted. In

* Another population forecast is 20,000,000 people by 1975, and 30,000,000 by the year 2,000. This would seem pretty close to the alternative estimates above rather than to the estimates in the Paley Report. D. F. Putnam (ed.), **Canadian Regions**, London (J. M. Dent), 1952, p. 572.

Projections of Selected Figures Relating to Canada's Industrial Development

Variables Projected	Paley Report			Report A			Report B		
	1950	1975	Percentage Increase	1952	1975-80	Percentage Increase	1949	1971	Percentage Increase
Total Population (millions)	13.8	17.9	30	14.4	20-23	40-60	13.5	18.9	40
Population of Age 15-64 (millions)	8.8	11.4	30	....	....	....	8.5	12.5	47
Labour Force	4.8	6.2	30	....	....	....	5.2	6.4-6.7	23-30
Average Hours Worked			15§						5§
Productivity per man hour			85						92
Gross National Product (thousand millions)	18.0	36.7*	104	23.0	50-60†	117-161	16.3	28.4-35-8‡	74-120

*In terms of 1950 prices.

†In terms of 1952 prices.

‡In terms of 1949 prices.

§Decrease.

the second place, there is a good deal of evidence that the "terms of trade" will begin to favour primary-product exporters for another reason. If there is a wholesale shift from agriculture to industry, prompted by the belief that industrialism is the road to national wealth, we may yet see the so-called advanced countries not only industrializing the world under forced draft, but feeding the world as well. At this point we should expect to find that underdevelopment will be defined in terms of over-industrialization, and plans for the economic development of backward countries will be based on the premise that *agriculture* is the road to national wealth. But before a swing to agriculture can take place, the present trend towards strength in other primary products may be reflected in a strengthening market for foodstuffs. In other words, by 1975, the world's hewers of wood and drawers of water may be in a pretty good business.

Nevertheless, we should expect that exports will fall relative to the Gross National Product and the Net National Income. An increasingly diversified economy, with population growth and primary-product output geared to an expanding secondary industry, is bound to find that the home market has grown relative to the export market. In all this, of course, there is no gloom for exporters as a whole. There is even some cheer for exporters of fish and fruit! A smaller fraction of a larger pie can still mean substantial gains for Canada's export industry.

Some General Observations and Conclusions

In general, we in Canada can look forward, I think, to a period of growth in secondary industry. This is both population-dependent and population-consuming. That is, it depends on increased population to provide a market, but it also uses that population productively in the manufacture of goods and services. We must not, however, assume that we will have a population one day equal to that of the United States. We can expect to rival the United States in mass production only if:

(1) the optimum-sized plant can be supported by a Canadian market of 20-30,000,000 people; or

(2) we have mutual free trade with the United States.

We can already support optimum-sized plants in many industries doing light manufacturing. And we already have free trade in farm machinery. As for free trade, I submit that it could be extended to a wider range of heavy manufactured goods such as automobiles, and, of course, to lighter manufactures, including textiles.

It is good to be on the side of the angels; and I believe that Canada, and fortunately for us, the United States, have a large economic stake in the future of free trade. If we are willing to continue our drive towards the free market, both domestically and in international trade, I believe that all regions of Canada, and not the centre merely, will find the next twenty years, or better the next half-century, a period of unexampled economic progress.

Cost Factors in Adjusting Prices . . .

By R. F. Hogan,
Assistant Controller, Ford Motor Co. of Canada Ltd.

Setting prices must be based on a knowledge of economics, an understanding of market conditions, familiarity with distribution techniques, and a grasp of the revelant cost facts. Five basic principles for effective pricing are offered by the author at the outset of the article. He then continues with a discussion of the elements of cost which should be taken into consideration to achieve an accurate forecast of the price of a product which has undergone changes in design.

AN INTELLIGENTLY conceived and aggressively directed price setting technique is an invaluable asset, if not an indispensable requirement in assuring your optimum place in the sun of a competitive market. Selection of just the right selling price is an extremely delicate executive decision. Zealous ambition on the one hand will tend to err on the high side, with attendant loss of unit sales and increase in unit costs. We must constantly beware of the wish becoming father to the thought and grandfather to the act. Cautious conservatism on the other hand will tend to err on the low side, with resultant failure to absorb total costs, even granting some greater exploitation of the market. Between these two extremes lies an undefined but very limited area in which, and only in which, management has liberty to set its product prices with impunity.

The price setter invariably finds himself in the unenviable position of being shoved up by costs and pushed down by competition, frequently wondering why he has to resolve the age-old riddle of the irresistible force and the immovable object. I sometimes think of this problem in terms of a man drawing a bath—he first turns on the hot water of costs, then tempers with the cold water of competition, sampling again and again to determine when the temperature is exactly right—then, and then alone, can he plunge in and relax.

Establishing the Product Price Climate

The main objective, therefore, is to establish a product price climate that will be simultaneously conducive both to outward growth and to inward security, because guaranteeing adequate market penetration coupled with a satisfactory absorption of all costs and the realization of essential life-blood profits. The fact that the area for free price election and selection is a restricted one, if injurious penalty is to be obviated, in itself presents a bold challenge, requiring the mustering of all the pertinent facts, the shrewd interpreting thereof and the translating of the conclusions into well-considered action. As my assignment is, by request, limited to the part played by cost factors rather than by competition in price determination, I now turn to consider the important question of what relevant cost principles must be thoroughly grasped

to permit intelligent managerial action. Before proceeding further, however, I should like to mention that the premise taken herein is that the products in question are not brand new or additional, consideration of which is obviously excluded from the topic heading, but are the standard, staple products of a company. For this reason I shall not touch on the peculiar problems inherent in pricing varying small specialized job orders, temporary defence business, experimental or supplementary products, lead items, etc. I shall assume, for sake of clarification, that we are dealing with a company that manufactures and merchandises a number of standard products, including replacement parts, encountering constant minor specification changes, annual major model changes, fluctuating seasonal demands and virile competition. No better illustration can be cited than the automotive industry, to which most of my observations will therefore apply in a particular sense.

The Five Principles of Pricing

Striking right at the heart of the problem, I submit the following five salient cost features which I consider requisite for intelligent pricing deliveration: First, the costs used should not be historical, but forecasted; second, they should not be fortuitous, but planned; third, they should not be idealistic, but factual; fourth, they should not be partial, but total; fifth, they should not be erratic, but levelled out.

The first principle then is that pricesetting interests are best served by creating an advance cost picture on a forecasted basis that will be specifically applicable to the period for which the prices are being established rather than using accounted costs, necessarily obsolete because pertaining to a period that is dead and gone. Our whole economy is too fluid; labour escalations too recurring; expansion programmes too significant; basic materials too critical and changing Government legislation too pertinent—to risk the sole use of past costs in building future prices. It is a wise management that has a group of forward cost analysts profitably employed in developing detailed cost forecasts for each major product at stated intervals. This function deserves every bit as much care and attention as the developing of actual costs for accounting statements. It is just as important for a company to know where it is going as it is to know where it has been. A dynamic pricing policy will demand projected cost information as one of its chiefest tools.

The second principle I would like to stress is that planned costs are far more conducive to acceptable prices than haphazard costs. By this I mean that, since selling prices are generally determined by the forces of supply and demand, it is not sufficient merely to guess what costs might chance to materialize and hope that there will remain room for adequate mark-up, but it is essential to adopt control measures to keep the cost stream within the established channel and thus not risk an overflowing of the banks with ruinous consequences. By budgetary

systems, statistical control, trend charts, comparative studies, time standards, detailed analyses, etc., it is possible to predetermine and control the yet unincurred expenditures. This approach is invaluable in guiding management well in advance whether to increase or decrease the output or to change the character of the product so as to create a cost climate compatible with attractive prices before plunging headlong into damaging commitments. Strong and undiminishing emphasis should be placed on the value of cost control, with its resultant economy of operation and reduction of expense, thereby providing the greatest insurance against loss and the greatest guarantee of maximum net profit. controlled spending is the path leading to the plateau of economic security whereas uncontrolled spending leads only to the valley of post-mortem regrets.

A third principle worthy of consideration is that the forecasted costs should be factual in character and degree as opposed to theoretic and idealistic. Cold reality may not be as exhilarating as warm imagination but it is certainly safer. The pricesetter cannot afford to build on fond hopes, wistful longings and wild dreams. He must face facts! And therefore, I submit that there is room for inclusion of judicious contingency factors in the cost estimates to provide for anticipated vendor price increases, currency exchange fluctuations, inventory shrinkages, labour scale adjustments, etc. It should always be borne in mind that careful integration and synchronization of the engineering, purchasing, manufacturing and merchandising programmes is an essential prerequisite to factural cost forecasting.

A fourth principle is almost a basic axiom, namely that the compilation of cost elements should not be framentary, but comprehensive, aimed at producing a complete summation of total product costs, rather than only a partial one. What the pricesetter subsequently does in the light of the assembled costs is a managerial prerogative. He may establish a certain price at the variable cost recovery level to implement a special policy decision, well knowing that the increment cost or economic profit principle is an important adjunct in the science of price adjustment. The cost accountant is nevertheless responsible to present management with all the cost factors, direct and indirect, fixed and variable, production and distribution, prime and allocated, tangible and intangible, processing and administrative. In this regard, it is very important to itemize each cost factor separately, such as direct material, tool amortization, commercial expense, etc., so that the weight of each item is readily discernible in relation to the final result. In this way, out-of-line factors may be easily detected and immediate attention can be devoted to their analysis and control. An invaluable rule is to compare the freshly assembled cost estimates with previous experience and established standards to assist in guaranteeing that not even one insignificant item has been overlooked and that the results will stand the rigorous test of comparative analysis.

The fifth principle takes into recognition the fact that the new prices are no doubt intended to apply to a protracted period of time, perhaps for a model year, or even longer, and that the costs must, therefore, relate to the entire period on some average basis. Unit costs will be lower at that season of the year marked by the strongest demand for the product and they will be higher when a seasonal slump requires temporary curtailment of production. Prices, established for either extreme will obviously not be properly representative and may prove positively detrimental. It is therefore necessary to smooth out any erratic or fluctuating cost trends in order to arrive at the proper long term averages that will best influence the pricing structure. Too frequently revised prices are likely to produce adverse market reaction, shareholder restlessness and a general feeling of instability. There are exceptional circumstances, of course, that call for interim adjustment of prices, such as pertinent sales and excise tax changes announced in a Government budget. As a general rule, however, stable prices throughout a model period are the wisest prices. It is apparent that standard costs predicated on standard volume provide perhaps the soundest basis for pricesetting from the standpoint of this important principle. However, they are not mandatory, provided the averaging feature of spreading costs over a reasonable period of time is given its due weight.

Having now considered the general principles that should govern the assembling of costs for pricing purposes, it might prove helpful and interesting to trace their practical application by assuming a hypothetical price adjusting problem and proposing a step-by-step approach to its solution. Let us, therefore, contemplate that a company is planning to introduce a model change in its line of products at a given date, at which time the relative prices must be announced to the public. We might be talking, for example, about a refrigerator, or a radio, or a passenger car, for the basic problems are very similar.

The Chronological Chart

The first step, from the pricesetters' standpoint, would be to develop a chronological chart listing each item of information that will be required, showing deadline dates determined by working backward from the public introduction date which is the governing factor. This chart might show such information as the following, which is presented here in inverse order to reveal the method of approach:—

(1) public introduction at "X" date;
(2) dealer showing—10 days prior to X;
(3) release of price lists to dealers—12 days prior to X;
(4) final management review of prices—20 days prior to X;
(5) development of recommended prices—25 days prior to X;
(6) compilation of competitive prices—30 days prior to X;
(7) completion of cost forecasts—33 days prior to X;
(8) availability of product specifications—60 days prior to X;

These are but suggested highlights, the chart itself going into much more detail to pinpoint responsibilities and unquestionably to itemize the individual cost factors in order to guarantee complete coverage and to facilitate steady, progressive development. The timing factor is of the utmost importance. Ultimate success hinges upon the many pieces being fitted into the jigsaw in perfect sequence and on rigid schedule so as to reveal, at just the right moment, the completed pattern.

Forecasting the Cost

It is apparent from the above that the Cost Department must commence its cost forecasting activities well in advance of the period in which the new models will be produced and sold. It therefore follows that prompt action must be undertaken to accumulate vital data and that formulae for calculating the various cost elements must be established in the light of cost trends, anticipated labour rates and overhead percentages, etc., calling for keen insight into pertinent manufacturing and marketing circumstances, coupled with a sprinkling of that rare commodity—sanctified imagination, by which I do not mean wild flights of fancy. The forward cost analyst has no easy assignment, always having to bear in mind the fact that his costs are being developed for yet non-existent product modifications and for a yet unentered period of time. Historical, accounted costs are useful only as a springboard from which he must catapult his advance cost estimates toward the future period for which they are preconceived. Thus principle number one is brought into play and a real trail-blazing cost job is pioneered.

Maximum results can be expected only when the sequence of background forces and influences finally emerging as tangible costs are fully appreciated from their inception to their consummation. Every link in the chain is important. The change in product design has its conception in the mind of a styling expert who is busily evolving idea after idea until there emerges the modified product arrangement that seems best adapted to attract consumer acceptance. This proposal is then consigned to paper on a drafting board by some product engineer, who tests it for practicability and functional qualities. At this point management may request a very broad estimate of what cost differences are represented by the proposal in order to weigh whether or not it should be scrapped, entertained, or further defined. This generally leads to concentrated activities of screening, checking, amending, modifying, etc., until firm material specifications are finally established and the newly-designed parts are announced to interested parties on approved engineering release forms. Here is where the cost analyst can really start to work! He prepares a bill of material for each major product, showing such information as the components, sub-assemblies and major assemblies involved, the quantities required for each part, the weight, size and type of the materials specified, etc. It is then essential to ascertain what materials and parts will be purchased from vendors and what operations will be performed within the plant.

To Buy or Not to Buy

Perhaps, I should digress at this point to mention that the decision whether to buy or to manufacture a specific component is not only predicated on having either an acceptable source or available plant capacity, but should be made in the light of the economic factors surrounding both alternatives. For this purpose a specialized cost approach based on the increment cost principle is requisite for sound guidance. This principle is the accepted accounting technique in presenting cost estimates for intelligent evaluation of alternative courses of management action. Wherever the element of choice is present, the vital function of a comparative cost estimate is to reflect the estimated financial advantage or disadvantage of one proposal over another. This is where increment costs are not only permissible but actually mandatory to bring the true perspective into clear focus. The increment cost concept simply implies that the entire emphasis is placed on the differences in the costs which are different. The crux of the matter is to present by special analysis for each choice all of the costs which will change if an alternative choice is made and to eliminate from consideration those costs which will not change. Employment of total costs for this purpose, such as are properly used in product pricing, would invariably mislead management in regard to the recurring but non-repetitive policy decisions unavoidably required when confronted with alternative possibilities. Inclusion of assigned, fixed or allocated costs which could not possibly be changed by any of the decisions to be made would simply provide a supply of red herrings to be dragged across the trail. It seems crystal clear that allocable fixed expenses already irrevocably incurred in the plant regardless of what make or buy decision is arrived at should play no part in the out-of-pocket cost comparison that management needs to make its decision. Comparative cost estimates developed on the increment principle therefore possess the specific and definite characteristics which are invaluable for management guidance, being predetermined, specifically analyzed, and devoid of all extraneous elements.

Prime Cost Estimation

This has admittedly been quite a lengthy digression, but I have wilfully indulged in it for the triple reason that the make or buy decision is a necessary prerequisite to the cost analyst making progress toward his major task of producing the projected model costs; and because of the vital and specialized part he must play in aiding management to arrive at the required decision; and because it exemplifies how principle number two is served by selecting the most economical course of planned action. Armed with the make or buy knowledge he is now able to submit formal requests to the Purchasing Department for purchase price estimates covering outside supplier items and to the Time Study Department for time standard estimates for home manufacture

items. As the replies are received back from Purchasing, incoming freight, duty and exchange factors should be incorporated on the basis of rates selected by policy decision to give comfortable coverage in the spirit of principle number three. Similar treatment should be afforded the standard direct labour estimates received back from Time Study, by providing in the direct labour cost buildup a sufficient percentage to recognize anticipated inefficient or off-standard performance in each of the affected production departments. In this manner the basic prime cost factors gradually take shape to form the solid foundation for the cost pyramid that won't be complete until the final element is superimposed on top.

The assistance implied above as coming from other company divisions or departments in the provision of basic and technical data is indispensable to the development of the dollar cost forecasts. Just here, however, I should like to sound a note of warning and raise the red flag of alarm. Other departments have not the same burning interest in the presentation of final costs by the usually extremely tight deadline and may therefore tend to procrastinate in putting their vital information in the hands of the cost analyst. Of course, they have their own problems as well. The Purchasing Department has to determine its sources and obtain vendor quotations on every changed item. The Time Study Department cannot provide estimated direct labour standards until the revised operations have been processed by an industrial engineer who is generally responsible to indicate what production departments are to be selected, what machines are to be designated and acquired, what sequence of operation is to be followed and what technical and mechanical aids are to be adopted. A word to the wise is generally sufficient, by which I suggest that an alert cost analyst will prosecute an ever-vigilant follow-up programme to obtain the strategic answers he is expecting from other quarters.

The Cost of Tools and Production Engineering

Having disposed of the prime material and prime labour factors, your attention is now focused upon the important and complex matter of special tool absorption. Model revisions, sometimes involving myriads of minor and several major changes, cannot be effected without incurring significant costs for fixtures, patterns, gauges, moulds, jigs and other tooling that have a theoretic lifetime coextensive with the new model and which therefore must not be treated as ordinary overhead but as a deferred charge to be amortized over the anticipated model volume. The cost forecaster must on the one hand calculate the estimated cost of this type of tooling and on the other hand match this against the quantity of related products projected for the new design period so that the aggregate tool cost can be resolved into per model amounts by the process known as "tool unitization". Where complex products are in view, this process is not as simple as it might appear.

For example, a major passenger car model change might include a combination of a modified engine with an expected run of three uninterrupted years; a chassis refinement that might conceivably last for two consecutive years; and a front end ensemble that will become specifically obsolete with the next model introduction. It is therefore necessary to relate the dollar cost of each tool to the specific part number to which it applies and then amortize this cost over the estimated volume for one, two or three model years according to what major assembly category the part belongs. It will be noted that this approach fulfils principle number five in that the tool amortization unit amounts have the effect of spreading the tooling cost evenly over the expected life of the product rather than cost of sales having to swallow the full impact of the charges at the start of the model year. The smoothed out tool costs facilitate the establishment of levelled out prices. In this regard certain companies even go a step further and adopt what is termed "cyclical" tool pricing, which simply involves averaging over a many year period the anticipated cost of both major and minor model changes representing a complete long term cycle of business practice, thus providing in theory standard tool amortization amounts for all time.

Another cost factor that can be resolved into per model amounts in a similar way to tool unitization is product engineering expense. It is recommended that this element of cost be kept segregated from the regular overhead application because it is distinct both from manufacturing and from commercial expense and because it can in itself represent a very significant expenditure.

Indirect or Allocated Costs

The stage has now been reached in developing our hypothetical example for the incorporation in the model cost estimates of the major indirect or allocated costs, commencing with manufacturing expense. This is, of course, a rather elusive and very extensive sphere in which varying types of cost permutations and combinations must be successfully corralled. For analysis purposes, it is well to highlight the relationship between variable, semi-variable and fixed overhead. It is no less helpful to delineate the same expense by direct, indirect and general categories. Detailed budget forecasts for all departments incurring manufacturing expense provide the basic information for the development of the departmental overhead rates. The cost analyst can then apply these rates to his estimated departmentalized direct labour for each model to arrive at the manufacturing expense allocation. The expense budgets should reflect an exhaustive account - by - account analysis, covering such major expense groups as indirect hourly rated labour and salaries, operating supplies, expense tools, purchases utilities, maintenance, fringe benefits, losses, delays and defects, fixed charges,

assessments and miscellaneous. Principle number four demands that not even one small expense account be overlooked.

I confess to a strong preference for the use of standard manufacturing overhead rates in developing cost forecasts for pricing purposes. The basic concept of standard overhead is that the current actual cost is not necessarily the best criterion of the true cost, but that the proper amount of overhead expense to be charged to the product is the amount incurred at standard volume. According to this theory, the overhead rates remain fixed throughout a period marked by various fluctuations in the volume of business because they have been computed from a pooling of costs representing high, medium and low rates of operation. Standard volume is the average annual quantity of product that would be produced at that level of operation indicated by management as representing long-term expectancy in the light of available plant capacity, market participation and economical operating conditions. A costing scheme which produces high costs in periods of falling production, and low costs as production rises, is not a reliable index for price-setting purposes. The use of standard burden rates is the intelligent and far-sighted approach because of the stabilizing effect they produce on the resultant costs in accordance with principle number five. Wherever standard costing is employed, however, it is recommended that the estimated off-standard performance for the period under price consideration be calculated and provided as data supplementary to the product cost forecasts for the discretionary guidance of the pricesetter.

Addition of estimated manufacturing expense to the previously described specific and amortized cost factors permits arrival at the projected manufacturing cost position. Prices, however, are not established at this level and the cost forecaster must, therefore, now proceed to superimpose the commercial or administrative expense element. Here is where the budget activity again plays an important part by supplying the aggregate dollar forecast for the ensuing period of all the detailed expense accounts covering administrative and merchandising activities, including such significant items as advertising, sales promotion, warranty, public relations, service, general accounting, etc. This estimate may be expressed as a percentage of estimated total manufacturing cost and applied as such to each individual model or product to indicate its unit participation in this type of expense. As commercial expenses are preponderantly non-variable in nature, it is not nearly as essential to standardize them as proposed above for manufacturing expenses.

There remains to include only such specific finishing touches as special cartoning or boxing costs, duty drawback on imported materials built into articles to be subsequently exported, inland freight, where terms of sale are f.a.s. seaboard, etc. I shall not deal at length with the mark-up or profit factor as being outside the cost sphere altogether. It

may vary from product to product as influenced by competition. Again, different treatment might be accorded optional equipment, accessories and service parts to that employed in regard to the basic product, for policy reasons. The point I would like to stress, however, is this — the more attention is devoted to producing accurate and comprehensive cost forecasts and to exercising scientific and effective cost controls, the more latitude management will have to write its own mark-up ticket. Seldom do you find two competing articles that are absolutely identical in quality, in appearance, in utility, in consumer service, etc., but, granting some leeway for these differences, in the last analysis money talks—it is the price that will clinch the sale. Conscientous cost control and an enlightened forward costing technique are the happy parents of a sound, attractive price structure.

In this regard, I would like to pass on in closing the Apostle Paul's advice from the twelfth chapter of his epistale to the Romans—"not slothful in business; fervent in spirit; serving the Lord"—expert counsel to regulate our conduct manward, selfward and Godward, covering so admirably the social, individual and spiritual departments of our lives.

Student Section . . .

Comments by J. D. CAMPBELL, C.A. R.I.A.

ACCOUNTING II — 1952 EXAMINATION

QUESTION X (10 marks)

The balance sheet of Richard & Howe, a partnership, appears as follows:—

Richard and Howe
Balance Sheet
As at March 31st, 1952

Assets

Current			
Cash		$ 3,400.00	
Accounts receivable	$ 48,000.00		
Less allowance for bad debts	1,800.00	46,200.00	
Merchandise inventory		22,800.00	$ 72,400.00
Fixed			
Furniture and equipment		13,100.00	
Less allowance for depreciation		2,500.00	10,600.00
			$ 83,000.00

Liabilities

Current			
Notes payable		$ 21,500.00	
Accounts payable		1,500.00	$ 23,000.00

Capital

A. Richard	33,000.00	
G. L. Howe	27,000.00	60,000.00
		$ 83,000.00

A contract has been signed with the Hockey Company Limited under which the latter agrees to purchase the business, exclusive of cash on April 1st, 1952, for $55,000. Profits were shared on a 50-50 basis.

REQUIRED:

Prepare entries, in general journal form, to record the sale of the business, and the closing of the books of Richard and Howe.

SOLUTION TO QUESTION X (10 marks)

	Dr.	Cr.
Realization	$ 79,600	
Allowance for Bad Debts	1,800	
Allowance for Depreciation	2,500	
Accounts receivable		$ 48,000
Merchandise inventory		22,800
Furniture and fixtures		13,100
To close assets sold to Hockey Company Limited to Realization account.		
Notes payable	$ 21,500	
Accounts payable	1,500	
Realization		23,000
To close liabilities taken over by Hockey Company to Realization account.		
A/Receivable Hockey Company	55,000	
Realization a/c		55,000
To record sale of partnership. (May be combined with general entry below.)		
Cash	55,000	
A/Receivable Hockey Company		55,000
To record receipt for sale of partnership.		
Richard Capital	800	
Howe Capital	800	
Realization a/c		1,600
To close loss on sale to partners on profit and loss sharing basis.		
Richard Capital	32,200	
Howe Capital	26,200	
Cash		58,400
To distribute cash and close the capital accounts.		

COMMENTS:

This question was well answered by the majority of the students. The only exception which might be pointed out is that certain students assumed that the liabilities were not taken over by the Hockey Company Limited and that Richard and Howe paid the liabilities and turned over the assets to the Company.

In a few cases the entries which were presented in the answers failed to follow the pattern of accounts which were set out according to the balance sheet.

In certain other cases a failure to read the question resulted in the presentation of journal entries which would be made on the books of Hockey Company Limited.

It might be noted that the final distribution of cash to the partners would be made on the basis of the balances in their accounts, whereas, the loss on realization would be borne in the profit and loss sharing ratio.

FUNDAMENTALS OF COST ACCOUNTING — 1952 EXAMINATION

Comments by A. V. HARRIS, C.A., R.I.A.

QUESTION 4 (10 marks)

(a) Design and illustrate with specimen figures a Stores Ledger Card suitable for recording quantities and prices of articles held in stock on a maximum and minimum stock basis.

(b) From the following information compute the value of the inventory on hand January 31 under:

(1) First in, first out method.

(2) Moving average method.

Inventory:

January 1 ..... 50 units at 60c

Purchases:

January 5 ..... 200 units at 70c

15 ..... 300 units at 75c

25 ..... 100 units at 80c

Sales:

January 10 ..... 175 units

20 ..... 300 units

SOLUTION TO QUESTION 4

(a) The usual cost accounting texts have examples of the required form.

(b)

(1) First-in, First-out Method:

The 175 units in the inventory are presumed to come from the most recent purchases. In such case the inventory is valued as follows:

Units		Price		Amount
100	@	80c	=	$ 80.00
75	@	75c	=	56.25
175				$136.25

(2) Moving Average Method:

Item	Quantity	Price	Amount	Unit Cost
Inventory	50	$.60	$ 30.00	$.60
	200	.70	140.00	
	250		$170.00	.68
Sales	175		119.00	
	75		$ 51.00	.68
Purchase	300	.75	225.00	
	375		276.00	.736
Sales	300		220.80	
	75		$ 55.20	.736
Purchase	100	.80	80.00	
Inventory	175		$135.20	.7726

COMMENTS

This question was not difficult, and most students supplied the examiners with a good solution to the (b) part of the question. As usual, they were not quite as proficient in submitting a specimen stock card.